

# Human Computer Interaction

## CS449 – CS549

### Week 3-2

#### What is a good user interface

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KÜRSAT ÇAĞILTAY

# Today – Foundational Concepts

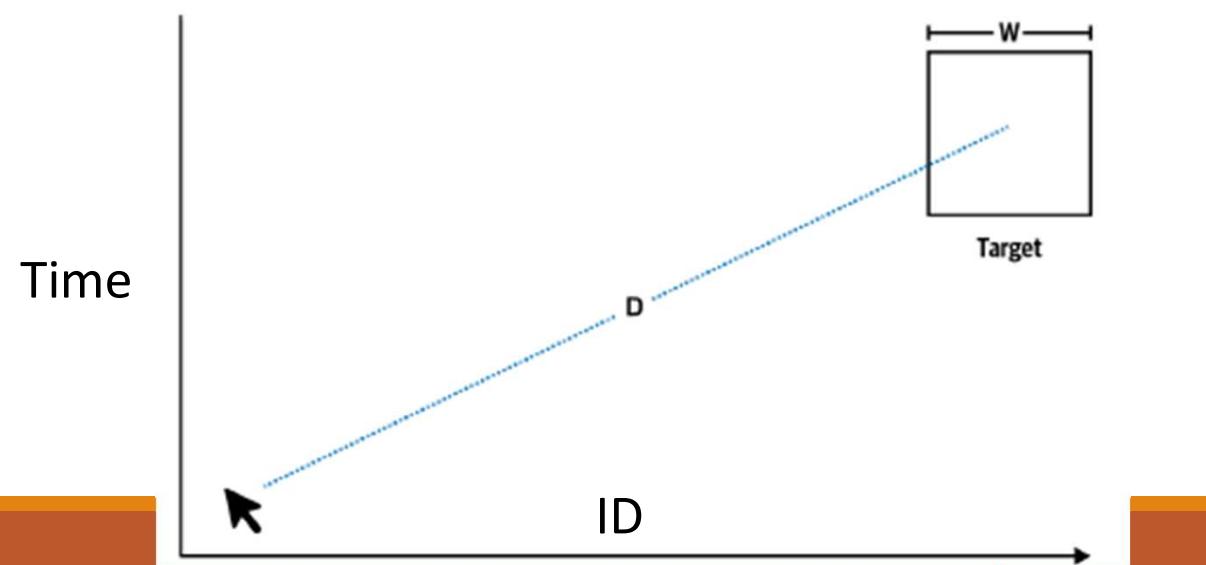
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- Guidelines
- Design Problems
- Assignment-2 and Assignment-5

# Fitts's Law (2nd assignment)

- Movement task's difficulty is a function of distance to move (D) and width of target (W):
- Index of Difficulty (ID) =  $\log_2 (2D / W)$
- Movement time (MT) is derived from ID for given data sample

- $MT = a + b \log_2 (2D / W)$
- a and b constants for device



# 2nd Assignment is on SUCourse-October 23rd

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- Students are expected to find one interactive service/system (**not a mobile one**) with design problem(s) that can be measured by Fitts' Law.
- Problem Definition –How is the design problem related with Fitts' law?
- Calculate the Difficulty Index (DI) of the design problem. Explain it Clearly
- Redesign and explain why your proposed solution performs better than the original one by comparing the new DI with the original design.
- Publish and share your solution with Figma

# Affect and Interaction

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- Users respond to interface beauty
- Users do not predict their own performance (process and outcome) accurately
- Designers cannot usefully predict user response through introspection, any current theory of interaction, or asking their colleagues!



# Affective Interactive Toys



Furby



NeCoRo

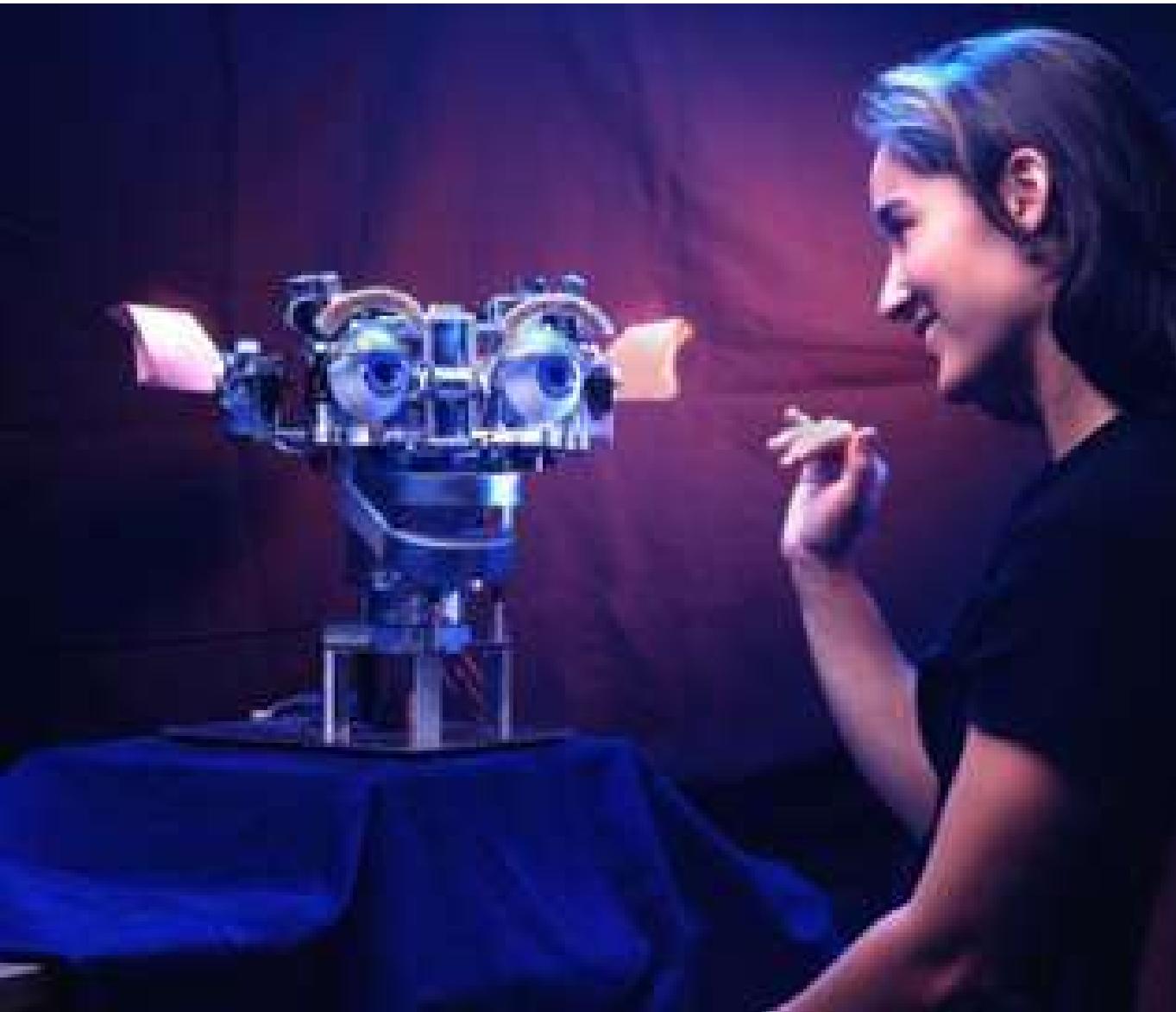


Paro



Aibo

# Kismet – Cynthia Breazeal, MIT



Sophia & Oğuzhan Uğur



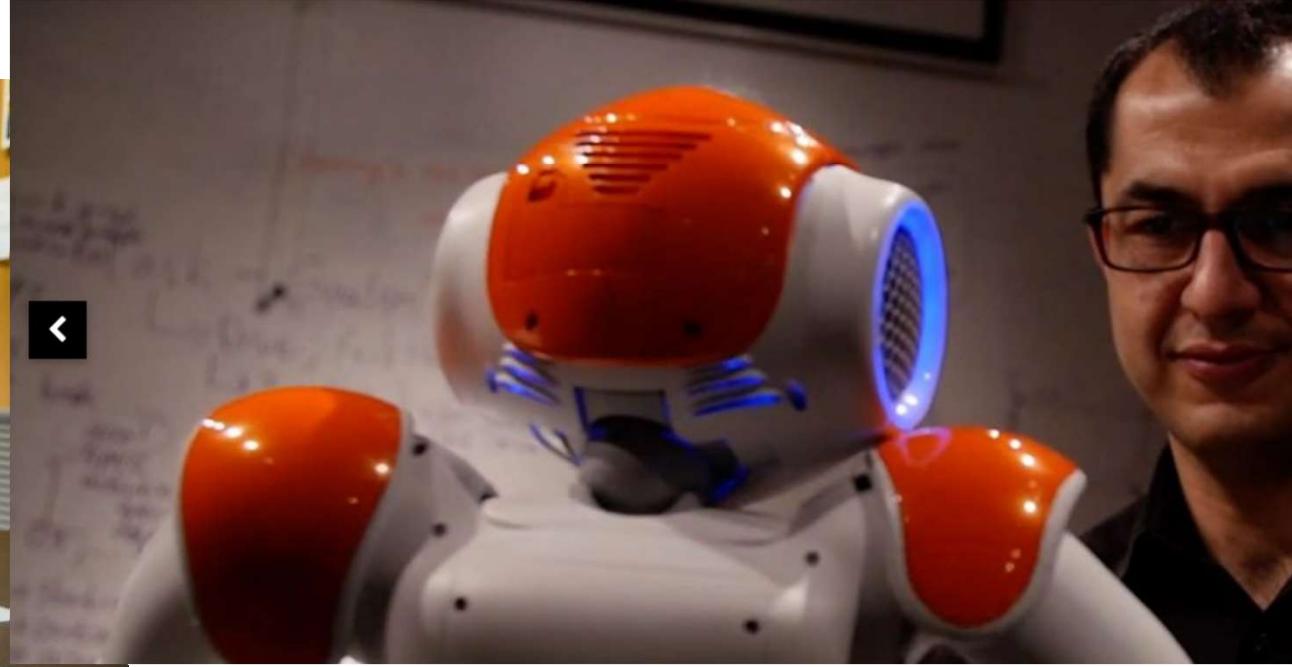
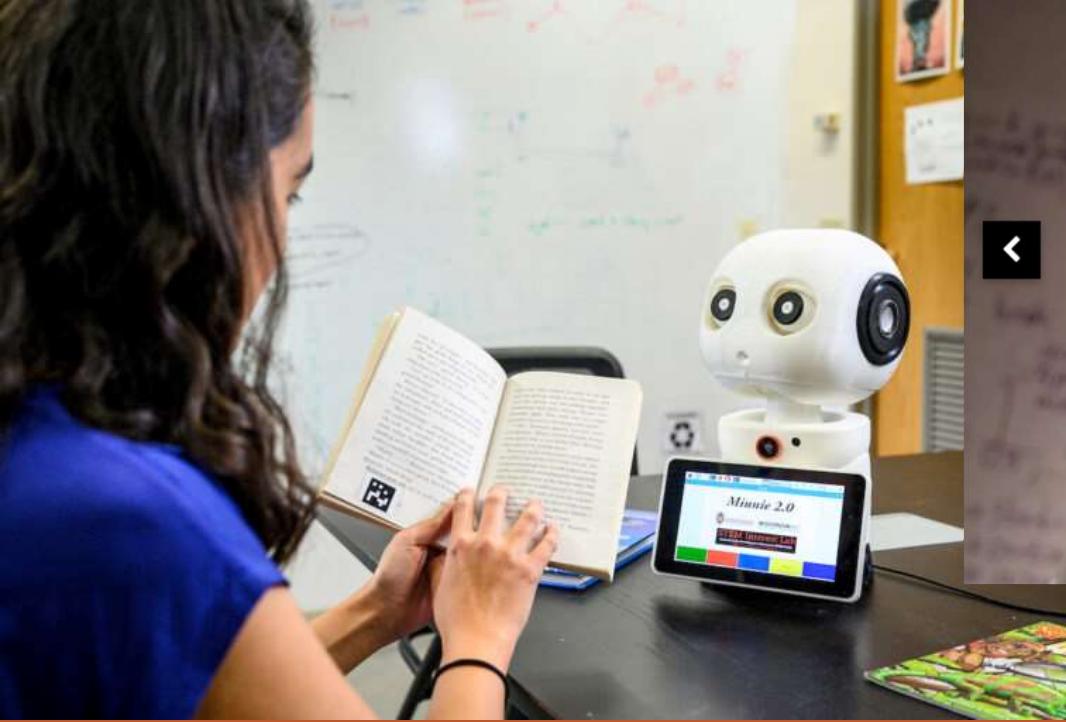
# Human Robot Interaction – University of Wisconsin, Madison

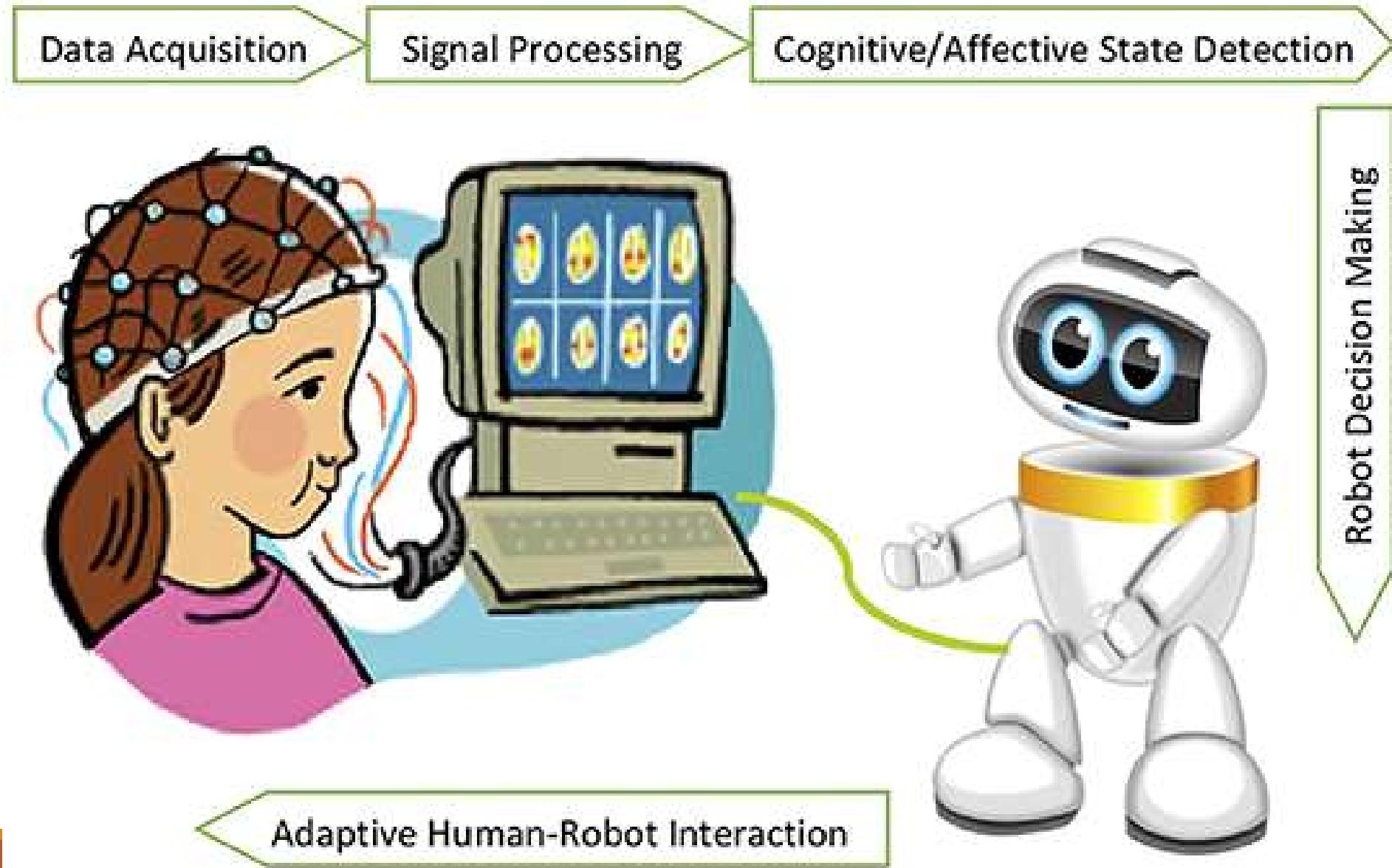
The collage consists of three main images. The top right image shows the official website for the People and Robots Laboratory at the University of Wisconsin-Madison. The middle image shows a white humanoid robot interacting with a person who is reading a book. The bottom right image shows a larger orange and white humanoid robot interacting with a person wearing glasses.

UNIVERSITY OF WISCONSIN-MADISON

 **People and Robots Laboratory**  
Improving Interfaces Between People and Robots

[Home](#) [Research](#) [Publications](#) [People](#) [Join Us](#)

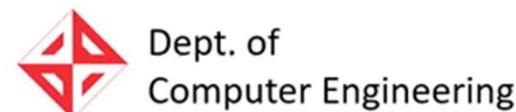






# Trust attribution in collaborative robots: An experimental investigation of non-verbal cues in a virtual human-robot interaction setting\*

Ahmet Meriç Özcan, Cengiz Acartürk and Erol Şahin



Dept. of  
Computer Engineering



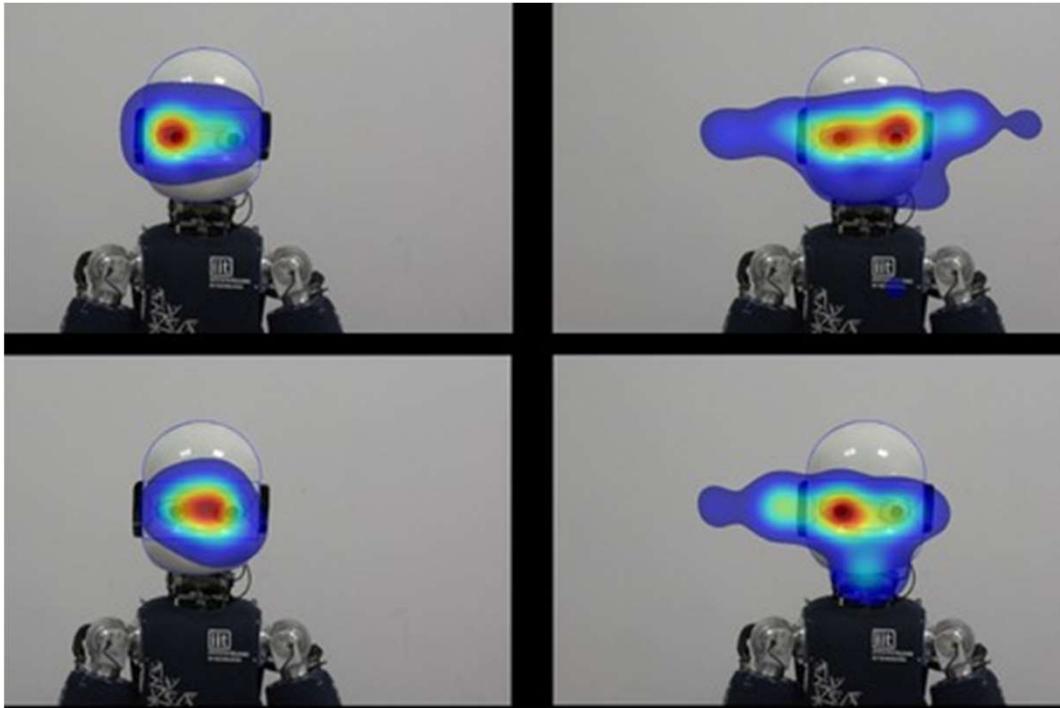
Center for  
Robotics and  
AI Technologies



KOVAN  
Research  
Lab

# Social Interaction with Robots

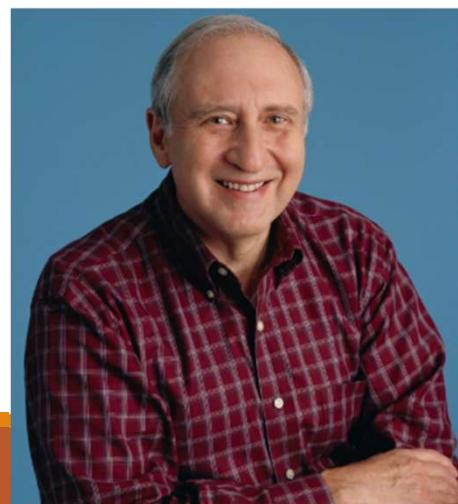
ODTÜ ROMER



# 1- Style Guidelines

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- Guidelines : Low-level focused advice about good practices
  - best practices derived from practical experience or
  - empirical studies, with appropriate examples and counter examples
- 😞 guidelines can be too specific, incomplete, hard to apply, and sometimes wrong





# Guidelines

## User experience guidelines for Universal Windows Platform (UWP) apps

Microsoft | Learn Documentation Training Certifications Q&A Code Samples Shows Events

Windows App Development Explore Development Platforms Resources

Filter by title

- > Build desktop apps
- > What's new?
- > Get started
- > Setup guides and resources
- > Design
- > Develop
  - Overview
  - > Build apps with the Windows App SDK
  - > Migrate from UWP to Windows App SDK
  - > Modernize your desktop apps
  - > Optimize performance & fundamentals
  - > User interface and input
    - Overview
    - Title bar
    - Apply Mica or Acrylic
    - Retrieve a window handle (HWND)
    - Display WinRT UI objects that depend on CoreWindow
    - > Windows UI Library (WinUI)

Learn / Windows / Apps / Desktop / Develop /

## User interface and input

Article • 09/03/2022 • 8 minutes to read • 6 contributors

This article provides an overview of the Windows UI frameworks that are currently maintained by Microsoft and compares their capabilities.

Microsoft produces both UI frameworks and app platforms. App platforms typically include a UI framework, while UI frameworks are either standalone (not shipped with an app platform) or can be used with multiple app platforms (see [Choose your app platform](#)).

The frameworks discussed here include the Windows UI Library (WinUI) for both Windows App SDK (WinUI 3) and UWP (WinUI 2), Windows Presentation Foundation (WPF), and Windows Forms (WinForms).

## User interface fundamentals

When building a modern Windows app, you have a selection of UI frameworks to choose from. UI frameworks provide your app with built in controls, styles, animations, input handling, and more.

There are five main components that go into creating a user interface for your Windows app. These components are usually built into each UI framework.

- <https://go.microsoft.com/fwlink/?LinkId=0x00000>

Apple Developer News Discover Design Develop Distribute Support Account

Overview What's new Guidelines Design Awards Videos Resources

## Design

Platforms Foundations Patterns Components Inputs Technologies

## Human Interface Guidelines

The HIG contains guidance and best practices that can help you design a great experience for any Apple platform.

## Featured

Platforms Designing for iPadOS

Foundations Inclusion

Patterns Onboarding

Components Buttons

Inputs Touchscreen gestures

Technologies Augmented reality

What & Why of Usability

How To & Tools

Get

# US Government



Recruiting Participants & the Legend of “The General Public”

Basics of User Experience

Content Strategy

Project Management

Visual Design

# Turkish Guidelines by TÜBİTAK KAMİS kamis.gov.tr

The screenshot shows the homepage of the KAMİS website. At the top, there is a header bar with navigation icons (back, forward, search, etc.) and the URL "kamis.gov.tr". The main header features the KAMİS logo with the text "KAMİS BETA" and "Kamu Internet Siteleri Rehberi Projesi". Below the header is a horizontal menu with links: "Ana Sayfa", "Hakkında", "KAMİS Rehberi", "Kullanılabilirlik", "Erişilebilirlik", "İletişim", and a search icon. The main content area has a large banner on the left featuring a laptop with the KAMİS logo and several blue gears. To the right of the banner are four buttons: "İnternet Sitelerinde Kullanılabilirlik", "Genel Özellikler", "Görsel Tasarım ve Kullanıcı Arayüzü Özellikleri", and "Erişilebilirlik". Further down, there are two more buttons: "Kamu İnternet Siteleri ve Mevzuat Bilgileri" and "Kullanılabilirlik Testleri ve Uygulamaları". At the bottom of the page, there are three columns: one with accessibility icons (person, glasses, eye, wheelchair, hearing aid), one with a "KONTROL LİSTESİ" graphic, and a "DUYURULAR" section containing the text "Web Kullanılabilirlik ve Erişilebilirlik Kursu Duyurular - 25 Şubat 2016".

kamis.gov.tr

KAMİS BETA

Kamu Internet Siteleri Rehberi Projesi

Ana Sayfa Hakkında KAMİS Rehberi Kullanılabilirlik Erişilebilirlik İletişim

İnternet Sitelerinde Kullanılabilirlik

Genel Özellikler

Görsel Tasarım ve Kullanıcı Arayüzü Özellikleri

Erişilebilirlik

Kamu Internet Siteleri ve Mevzuat Bilgileri

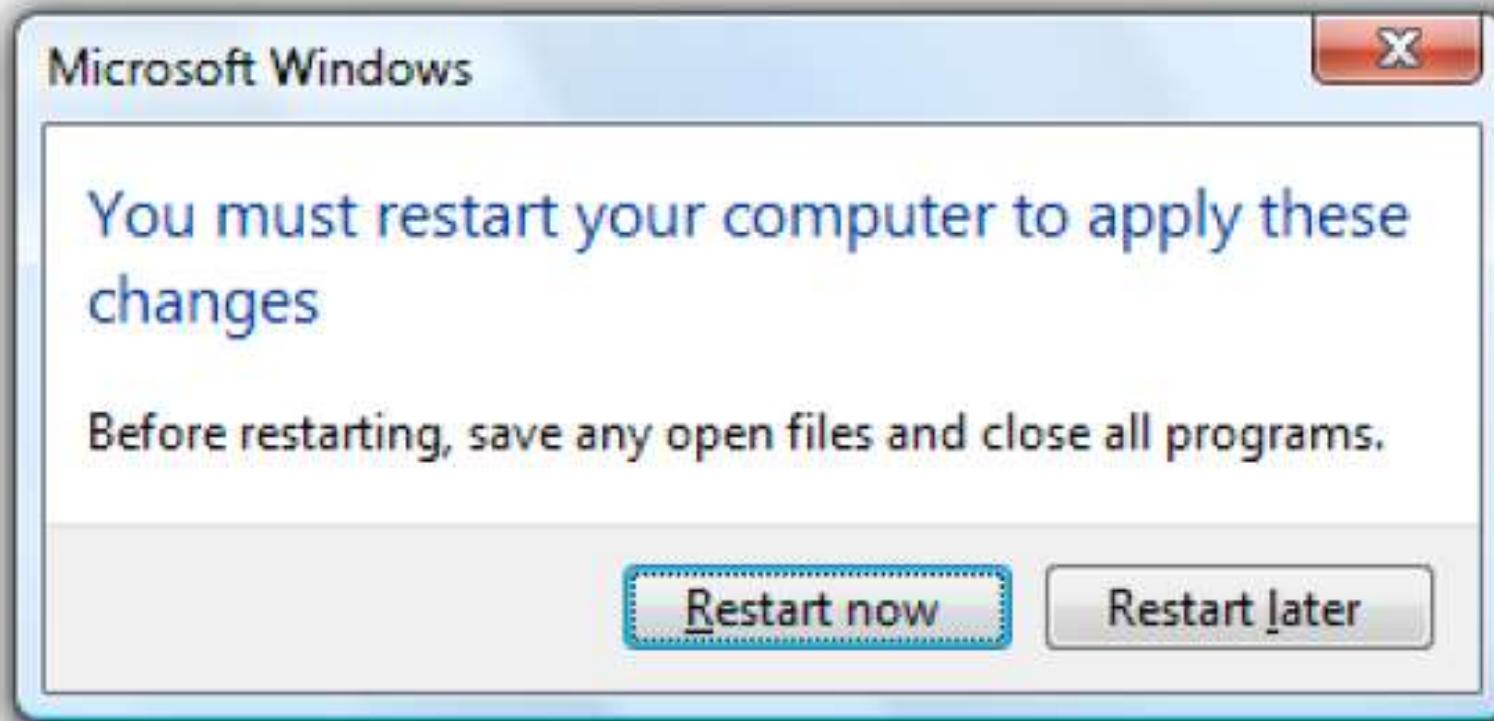
Kullanılabilirlik Testleri ve Uygulamaları

DUYURULAR

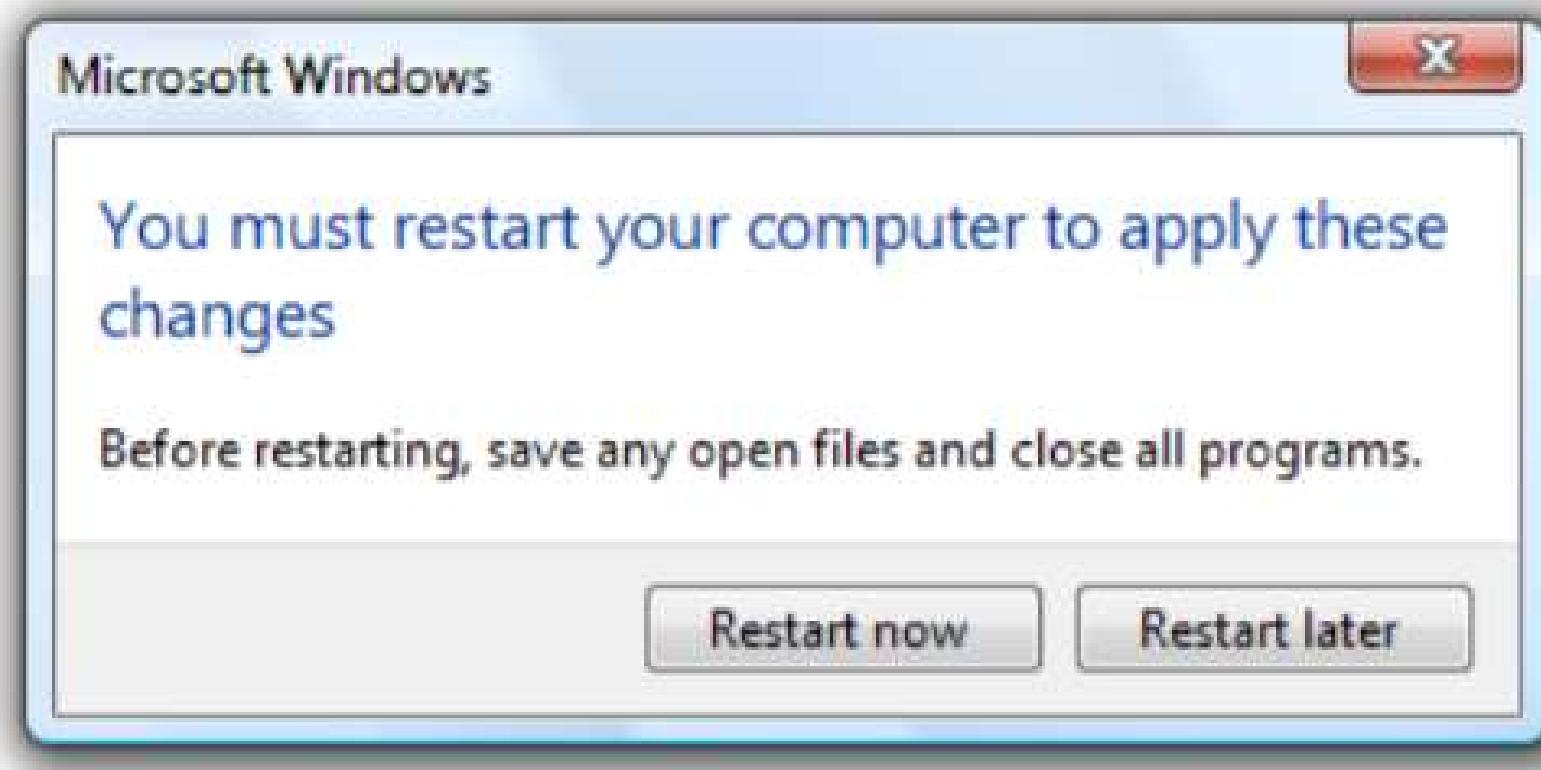
Web Kullanılabilirlik ve Erişilebilirlik Kursu  
Düzenlendi - 25 Şubat 2016

# MS Guidelines

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**Correct:**





## Speech Recognition Voice Training

X

### Welcome To Speech Recognition Voice Training

By listening to you read aloud to the computer, Speech Recognition learns how you speak.

On the next page some training text will be displayed. When the training text appears, read it aloud in a natural and even tone.

The system will display one line at a time. When you have finished reading a line, the system will, after a short pause, automatically present the next line.

If the system doesn't understand what you read, it will skip to the next line. This is normal, and not a cause for concern.

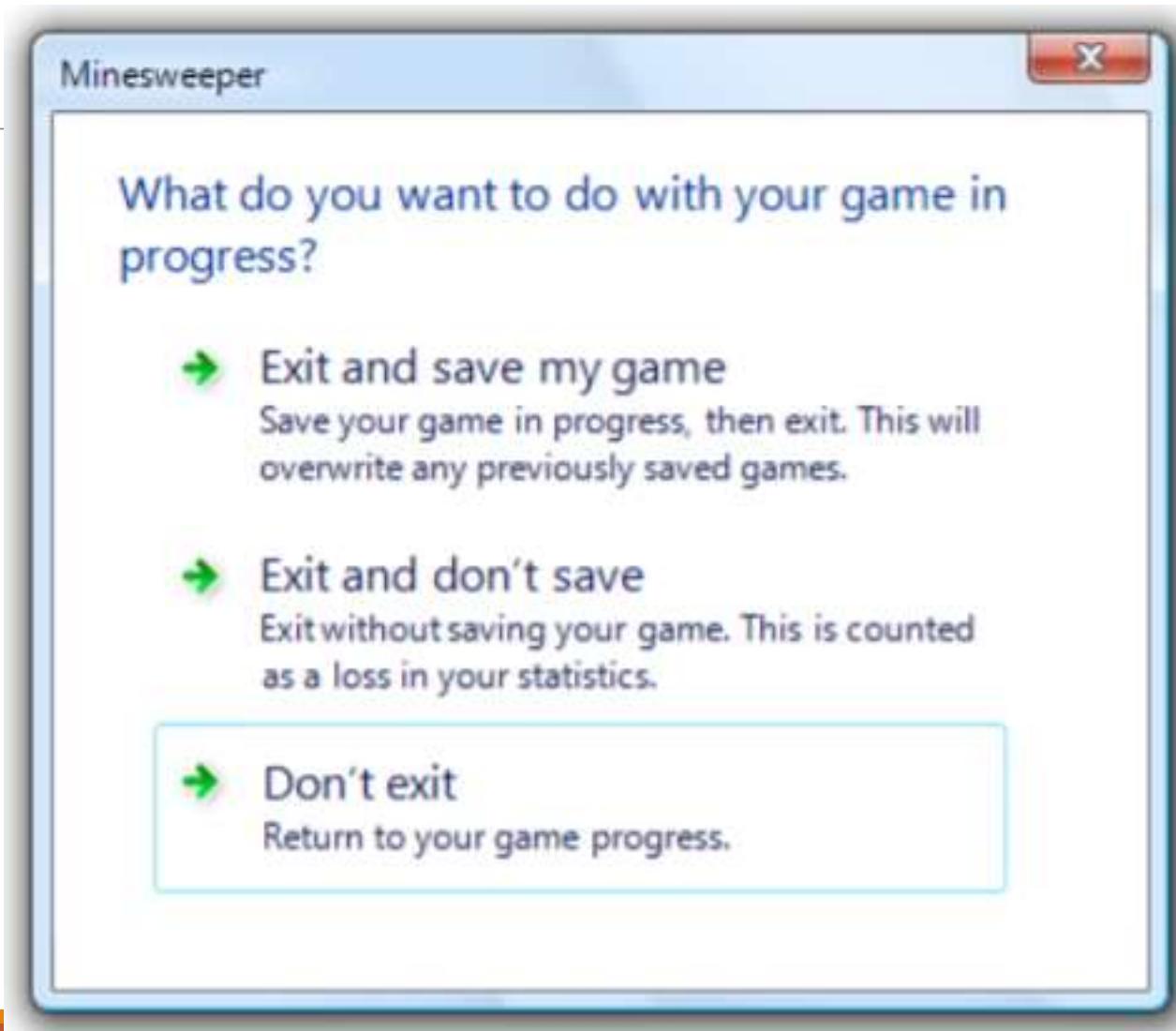
Click Next to begin training.

Note: We recommend that you take the Speech Recognition tutorial first. In addition to improving the recognition of your voice, the tutorial also gives you an opportunity to learn the most important Speech Recognition commands.

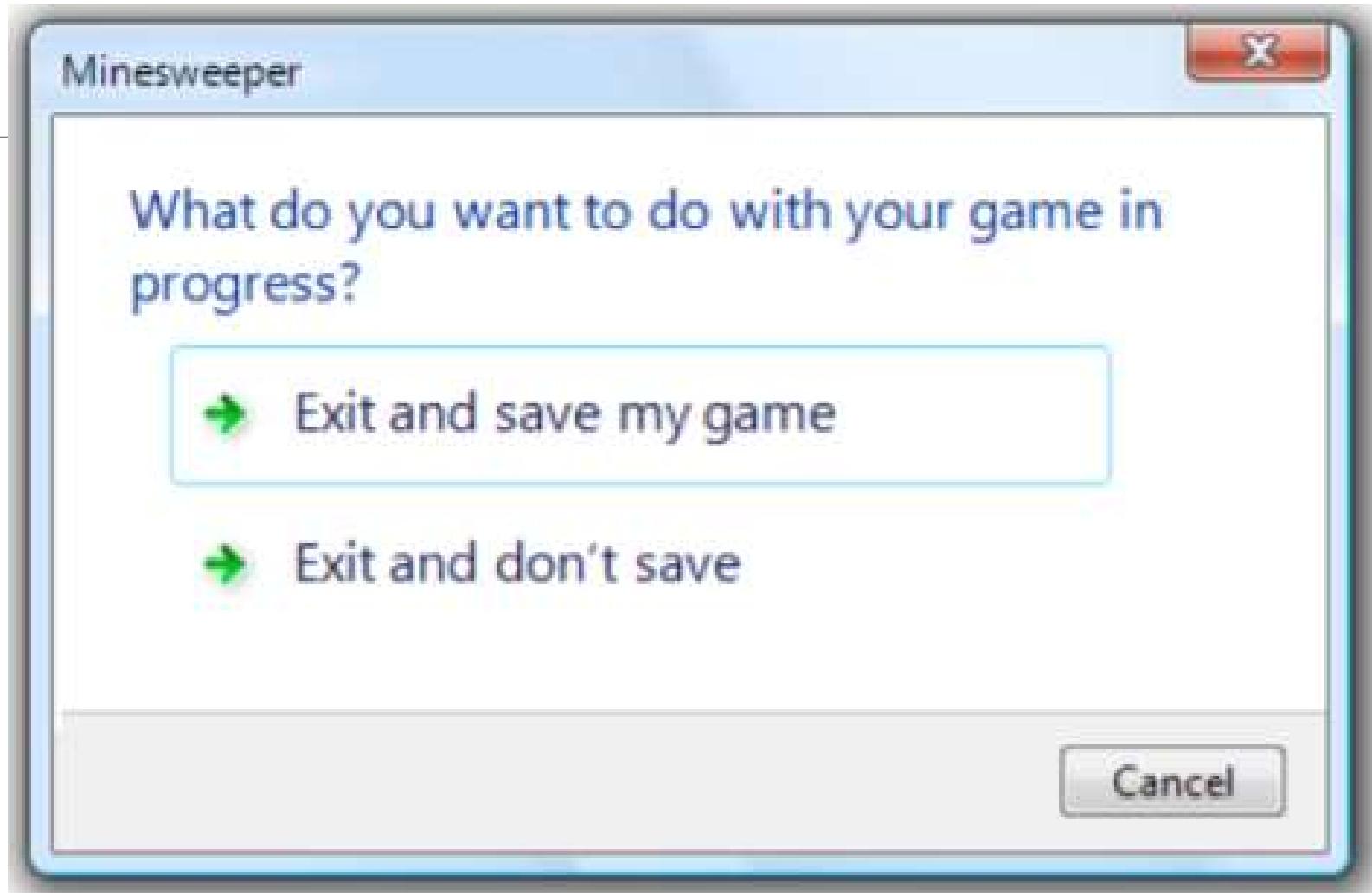
Next

Cancel

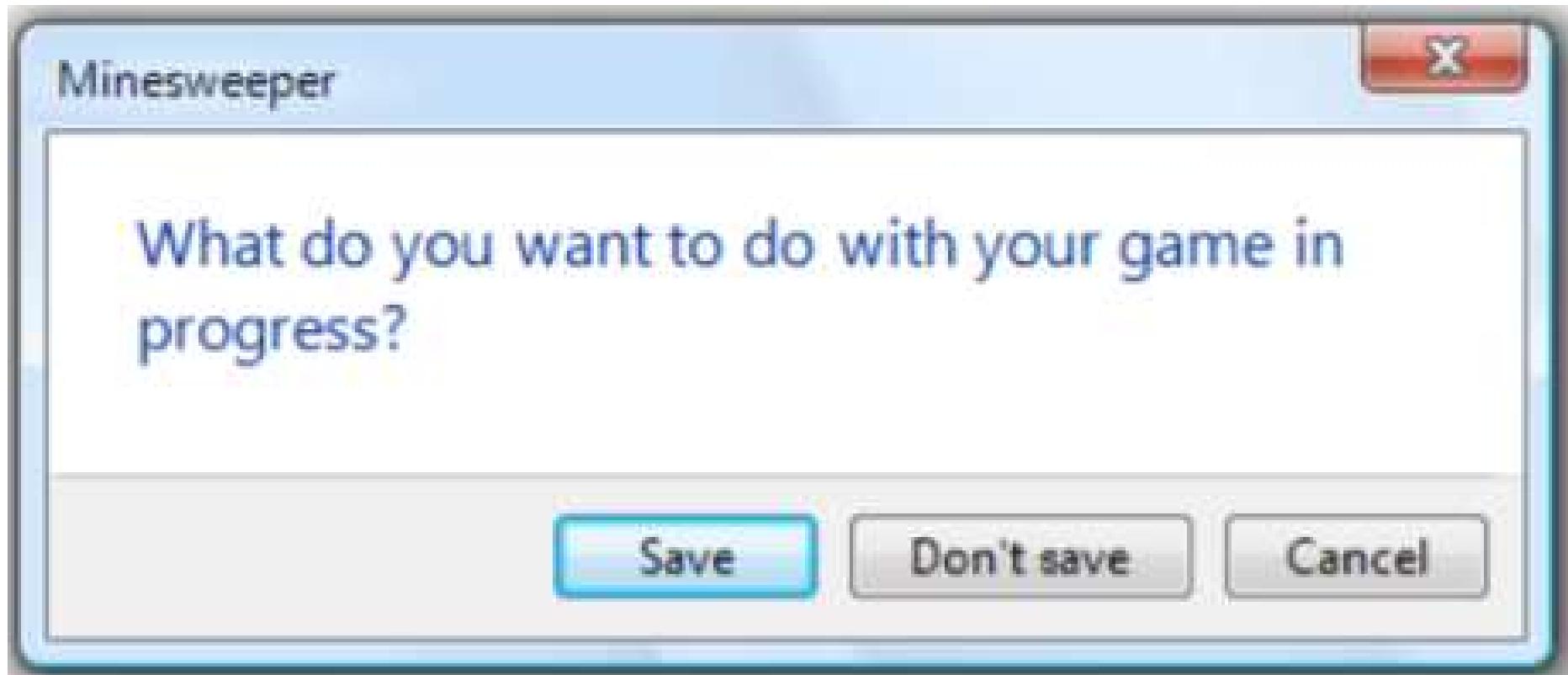
# What is Wrong?



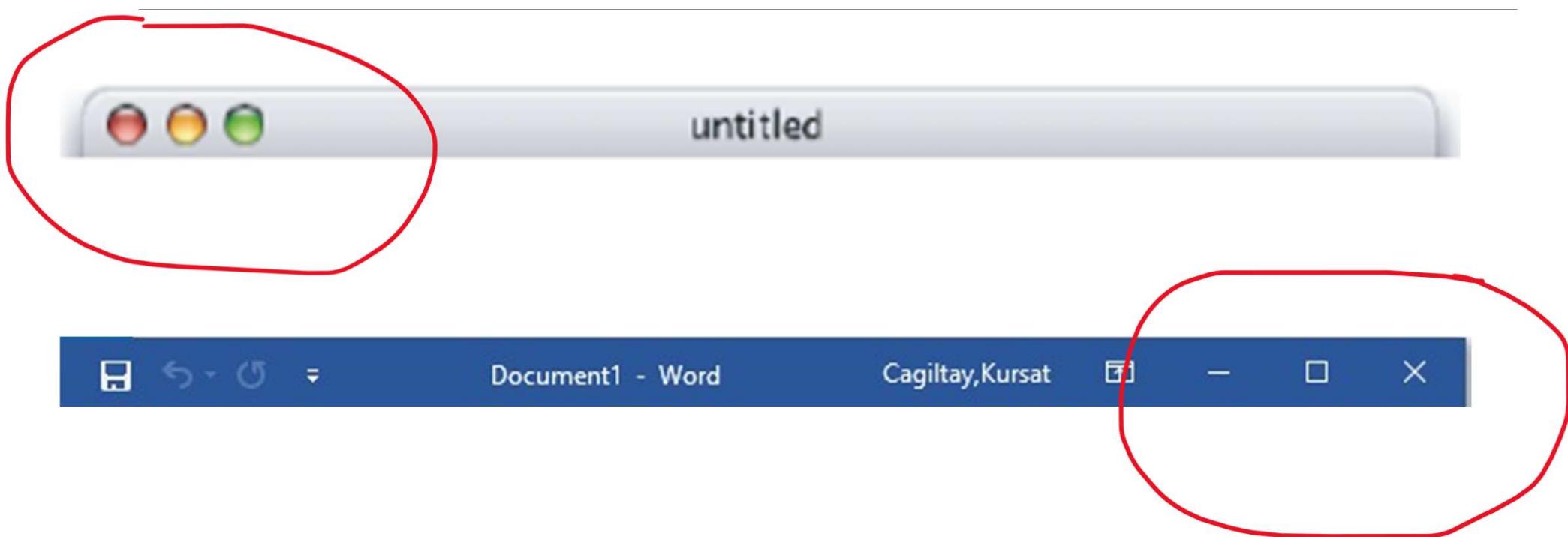
# Next



# Final



# Which Style?



# Problems with style guides

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- Compliance does not equal usability!
- Guidelines may be inappropriate
- Interpreting and applying is left to designer
- Not always clear what is the basis for a guideline or recommendation

- **Pieces from faces of beautiful women do not make the most beautiful woman face**



## 2- HCI Principles/Guidelines

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- These are general principles of design
- Not tied to a platform or producer
- Explicitly aimed at improving usability

# Early HCI Guidelines

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- Provide help-facilities (Hansen 1971)
- Ease of use and understanding, (Lewis, 1973)
- Informative error message ( Kennedy 1974) Consistency (Gaines and Facey 1975)
- Allow user to be in control ( Palme, 1975)

# Limitations to all guidelines

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- **Too general**
  - Be consistent...sure but how?
  - What is feedback anyhow....a beep?
- **Frequently vague**
  - How do you design a 'good' error message?
- **Rarely establish their limits of application**
  - What about user development?

# For Example: Be Consistent

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- Three types of consistency
  - Internal to the application
  - External to other applications
  - Correspondance to the world
- Which should we design for?

**mySU**

People Search... more search

Acad. Calendar SU Calendar Make A Donation KVKK Logout

#TümGüçümüzleGeleceğe  
#BiliminGüçüyleGeleceğe  
#EğitiminGüçüyleGeleceğe  
#SanatınGüçüyleGeleceğe  
#PaylaşımınGüçüyleGeleceğe  
#İletişiminGüçüyleGeleceğe

**Request/Complaint Form**

**Bookmarks Search**

For Faculty +  
My Reports +  
Favorites +  
Administrative +  
Services +  
Useful Links +  
Academic +  
**SUTicket**

CampusNet

**ALL ANNOUNCEMENTS**

- Seasonal Flu Vaccine
- Campus Vehicle Entry Plate Recognition System(PTS-Sticker) Registration!
- Minerva Konuşmaları
- Doğuş Group Career Day
- ADP Peer Study and Discussion Sessions (17-20 Oct. 2022)
- Career Event / Career Development Seminars
  - Long-Term Internship Opportunity @ Şişecam
  - Suform Application Maintenance Work
  - Bilgi Merkezi: Açık Erişim Haftası Etkinlikleri
  - Career Event / CV Check with HR Professionals
  - Condolences

**ALL EVENTS**

08:30 BUSINESS ANALYTICS WORKSHOP 2022  
09:00 Proj 3V.2 & Sparks Exhibitions in FASS Art Gallery

14:40 Career Development Seminars

**Sabancı Üniversitesi**

Home Services ▾ Users ▾ Off Campus My Account

**Information Center**

Just search it... search books, articles, and more... **Find**

Advanced Search

**Kitap Reçetesi**  
Herkese özel kitap reçetesi yazıyoruz!

**Kitap Reçetesi**  
Sabahları aç karnına 2 öykü.  
Öğleden sonra hafif 2 süt, isteğe göre bir deneme de olabilir.  
Yatmaya yakın güzel bir roman

**Feedback**

Classic Catalog Databases Journals Room Reservation

SU Research Database Request Forms Orientation Request Book Request via Cargo

The image displays four Microsoft Office application windows side-by-side, each with its own ribbon interface:

- Word:** The ribbon tabs are Home, Insert, Design, Layout, References, Mailings, Review, View, Help, and Tell me what you want to do. The Home tab is selected. The ribbon bar also includes a 'Clipboard' section, a 'Font' section (with Calibri (Body) 11 selected), and a 'Paragraph' section.
- PowerPoint:** The ribbon tabs are File, Home, Insert, Design, Transitions, Animations, Slide Show, Review, View, Help, and Tell me what you want to do. The Home tab is selected. The ribbon bar includes a 'Clipboard' section, a 'Slides' section (with New Slide selected), and a 'Font' section.
- Excel:** The ribbon tabs are File, Home, Insert, Page Layout, Formulas, Data, Review, View, Help, and Tell me what you want to do. The Home tab is selected. The ribbon bar includes a 'Clipboard' section, a 'Font' section, and a 'Cells' section.
- Access:** The ribbon tabs are File, Home, Create, External Data, Database Tools, Help, Fields, and Table. The Table tab is selected. The ribbon bar includes a 'Views' section (with Text selected), a 'Properties' section, a 'Formatting' section, and a 'Field Validation' section.

Each window has a title bar indicating the document name (e.g., Document1 - Word, Presentation1 - PowerPoint, Book1 - Excel, Database1: Database- C:\Users\suuser\Documents...) and the user's name (Cagiltay.Kursat). The windows are arranged horizontally, showing the consistency of the ribbon design across different Microsoft Office products.

# Other Apps?

- Google Calendar vs MS Outlook

- Save button?

A screenshot of the Google Calendar interface. A modal window titled "Add title and time" is open, prompting the user to "Event" or "Task". The main calendar view shows a month of October 2022 with various events listed by day. A specific event on October 12th is highlighted with a blue background and labeled "(No title)". A red circle highlights the "Save" button at the bottom right of the modal.

A screenshot of the Microsoft Outlook calendar interface. A modal window titled "New Event" is open, showing a timeline from May 27 to June 2, 2018. The user is creating a new event for "May 29 Tue". The event details include "Doctor's aptt for Evan" (All day), "Fri 8/26/2017", "9:00 AM", "to 10:00 AM", and "Kevin's birthday event (bring chocolat e)". Two buttons at the bottom are circled in red: "Save" and "Discard". The main calendar view shows a weekly layout with various events scheduled throughout the week.

The image displays three different calendar interfaces side-by-side, illustrating how to close a window or cancel changes.

- Google Calendar (Left):** Shows a monthly view for October 2022. A red circle highlights the "Save" button in the "Add title and time" dialog box, which is overlaid on the calendar grid. The dialog includes fields for "Event" and "Task", a date range from Wednesday, October 12 to Wednesday, October 12, and a "Find a time" button.
- Microsoft Outlook (Middle):** Shows a weekly view from May 27 to June 2, 2018. A red arrow points from the "Save" button in the Google dialog to the "Discard" button in the Microsoft Outlook event creation dialog. The Microsoft dialog shows a scheduled event for "Doctor's apppt for Evan" from 9:00 AM to 10:00 AM on May 29, 2018.
- Another Microsoft Calendar View (Right):** Shows a monthly view for October 2017. It displays various events like "Piano recital for friday performance", "Kevin's birthday event (bring chocolate)", "My calendar", "Doctor's apppt for Evan", "Dentist appointment, Bucharts local registry", and "Playdate with Sophia and Kids".

## • How to close window?

# Design Problems

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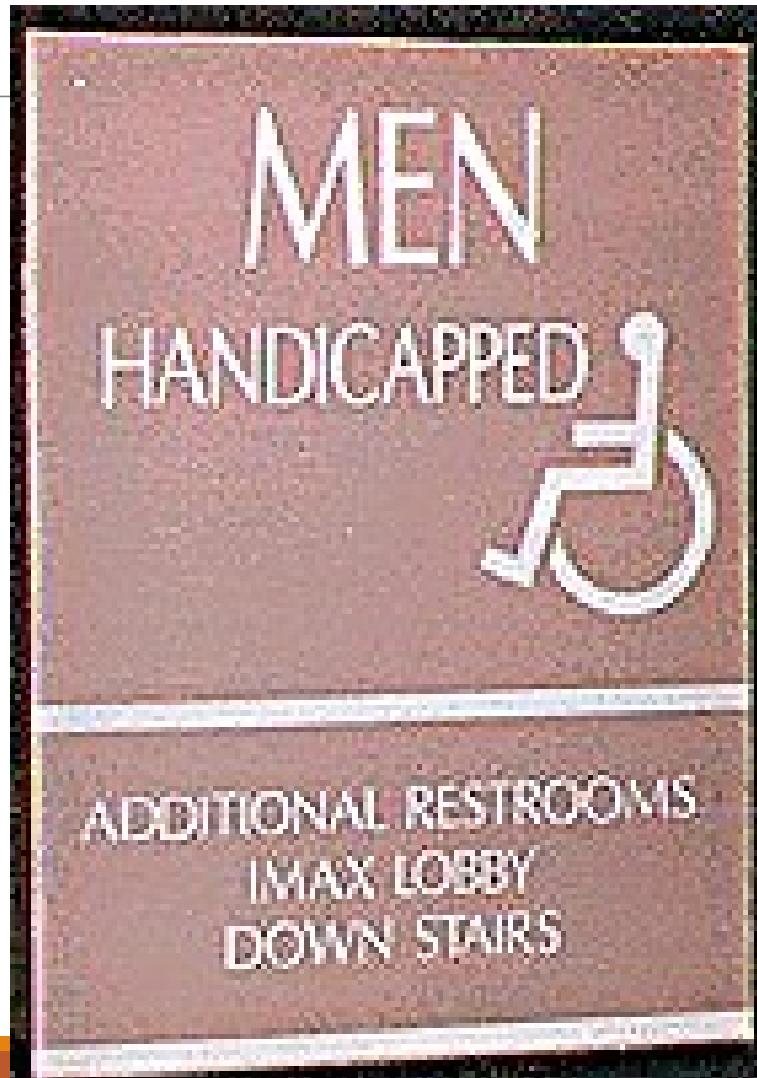
26-11-2006

<http://www.hurriyet.com.tr/gundem/5675530.asp?m=1&gid=112&srid=3430&oid=4>

# Design Problem: Ankara&Gökçek



# Harmless problems



# Harmless problems

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# January 13, 2018

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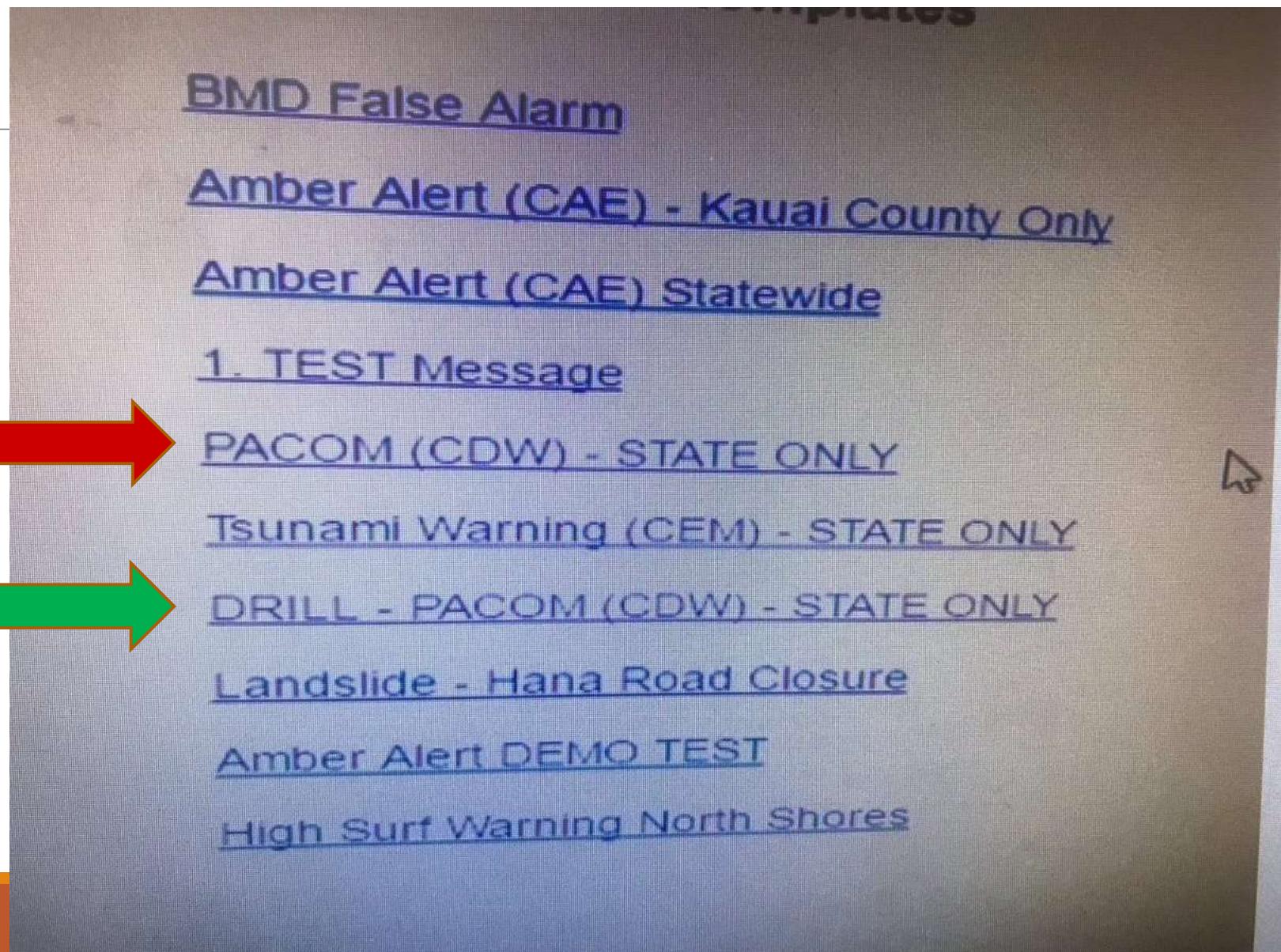
## Hawaii missile false alarm due to badly designed user interface, reports say

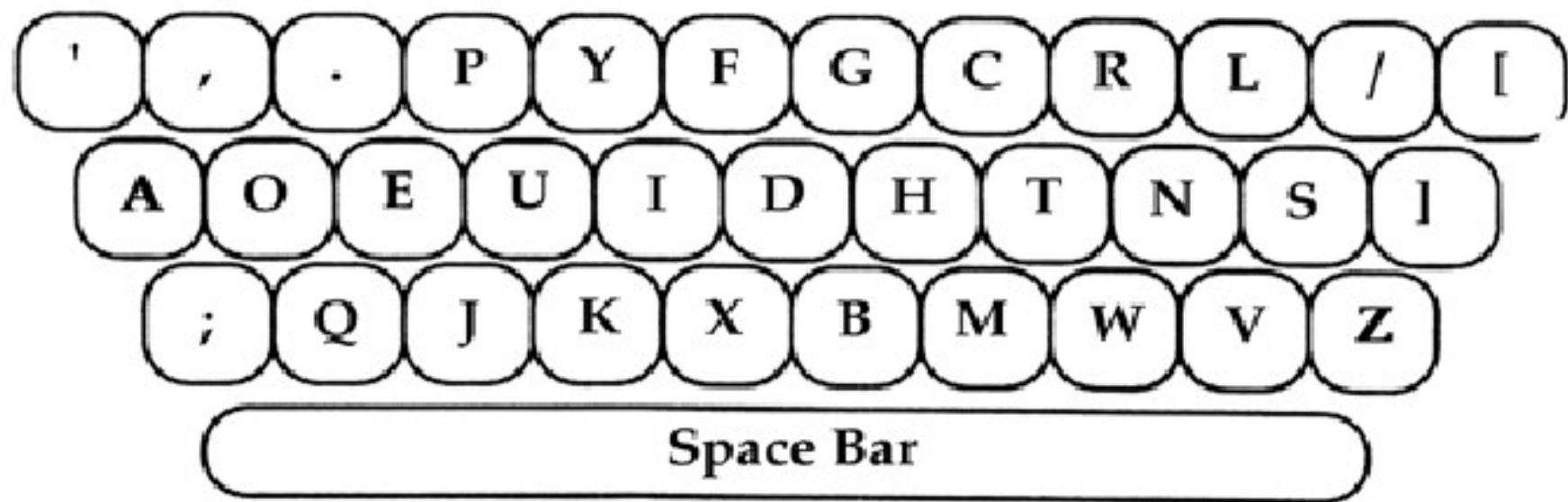
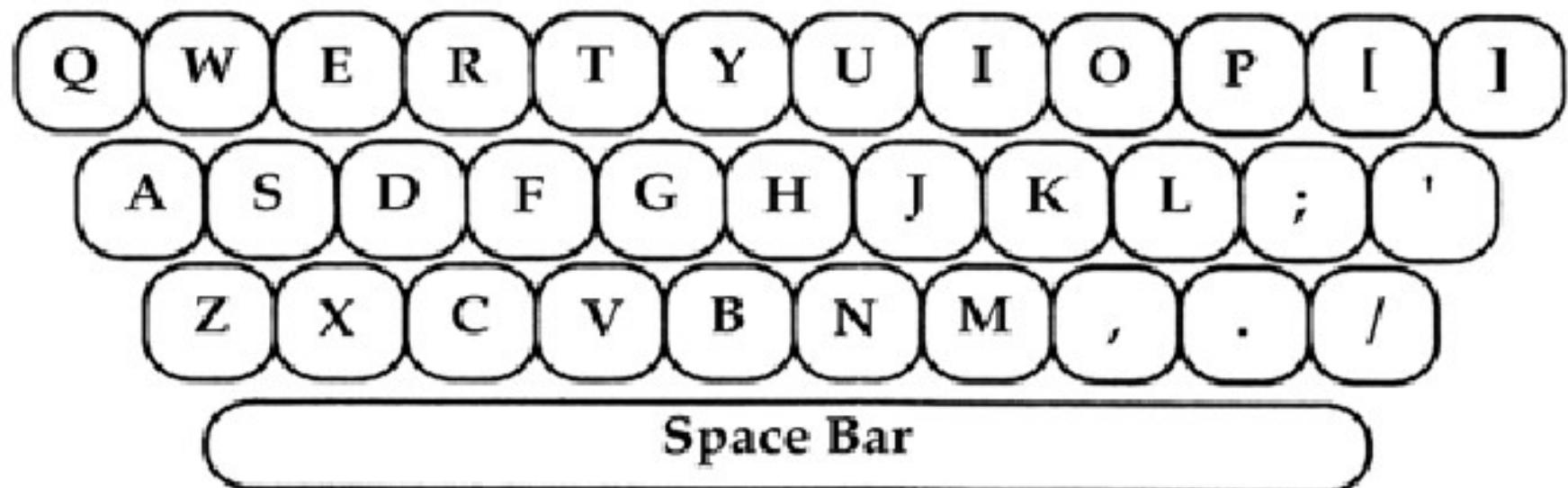
Alert occurred after employer pressed button labelled ‘missile alert’, instead of the one next to it marked ‘test missile alert’

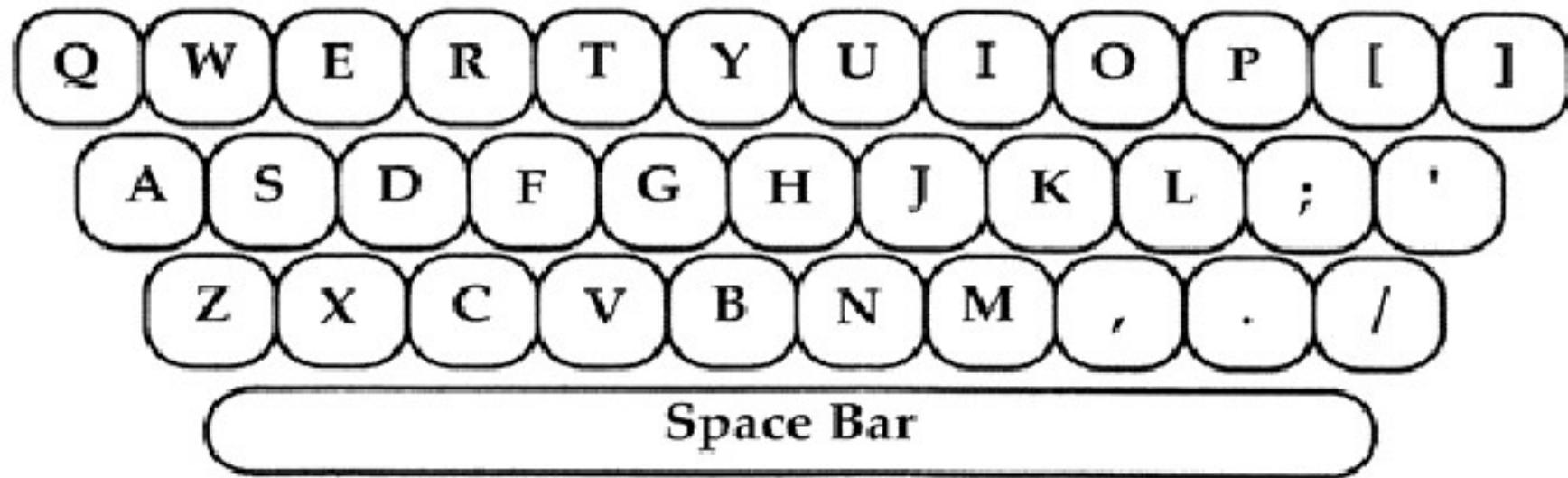




# Operator Screen

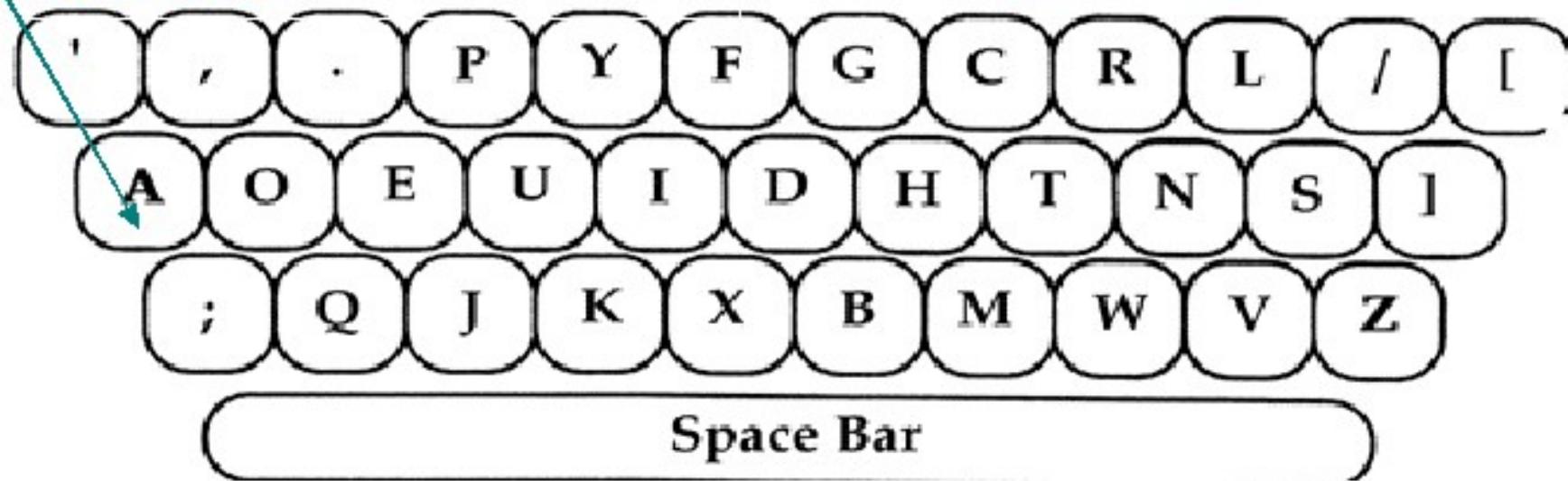






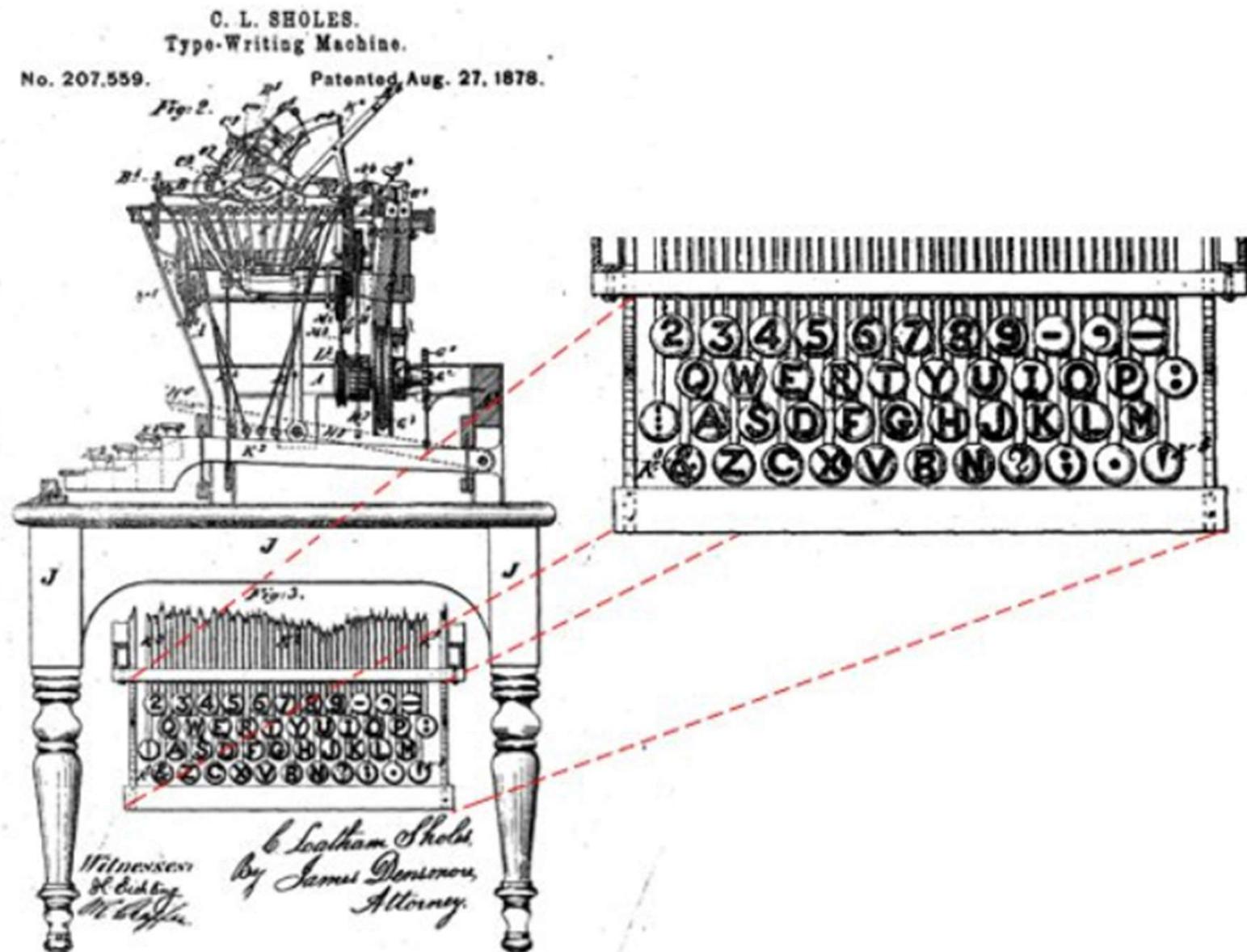
**Vowels and frequently used consonants**

**Better right/left hand symmetry**



**35% of normally used words can be typed on home row**

- 1878 – Patent
- C.L. SHOLES



.S. Patent No. 207,559. The first appearance of the QWERTY keyboard. Google patents

??



Anasayfa > Donanım > Klavye Hızlı Yazma Rekorlarını Neden Hep Türkler Kırıyor?

# Klavye Hızlı Yazma Yarışmalarında Neden Hep Türkler Birinci Oluyor?

Erkan Ceylan — 2 ay önce

10 dk okuma süresi



Klavye hızlı yazma yarışmalarında Türklerin sık sık şampiyon olduğunu mutlaka duymuşsunuzdur. Bunun tek nedeni gerçekten F klavyenin tasarımı mı, yoksa farklı nedenler de bulunuyor mu?



Bu yarışmalar, merkezi İtalya'da bulunan, **Uluslararası Bilgi İşlem**



**Federasyonu(INTERSTENO)** tarafından iki yılda bir çeşitli ülkelerde **Dünya** Bilgisayar Şampiyonaları adı altında düzenleniyor. Futbolda Brezilya neyse bu yarışmada da **Türkiye** o!



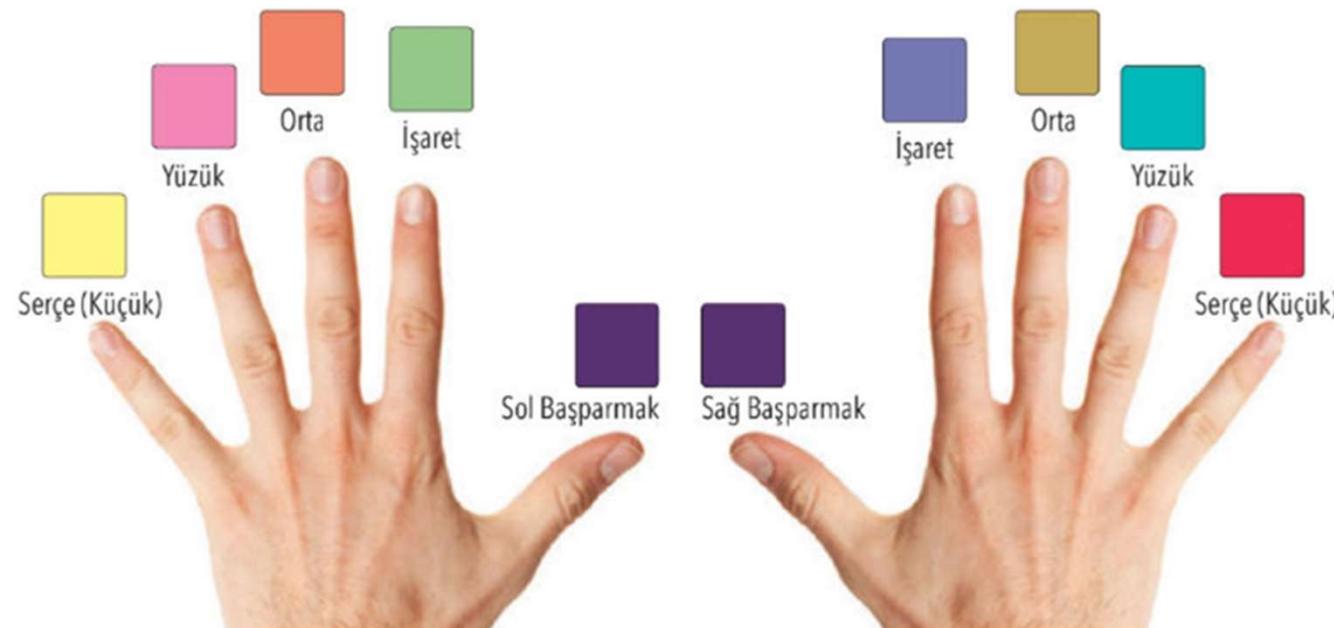
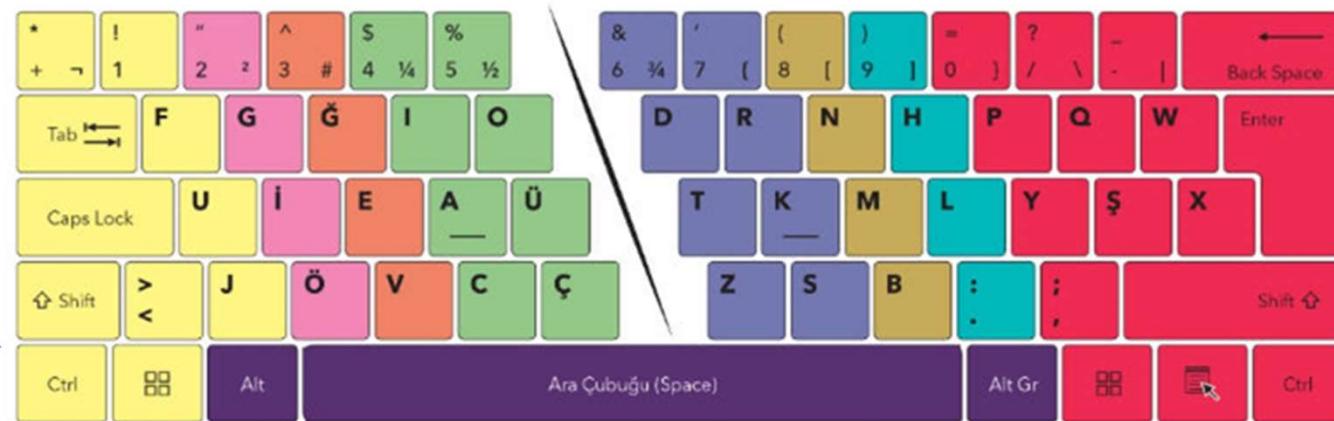
22 kez Türkiye, 3'ünde rekor olmak üzere toplamda 9 kez Dünya şampiyonu olan **Celal Aşkın**'a bu işin sırrını sorduk.



| **Dünya Bilgisayar Şampiyonaları** toplamda 3 varış

# Turkish Words

- a harfi 26.323,
- e harfi 16.308,
- k harfi 13.542,
- i harfi 13.384,
- m harfi 11.263,
- l harfi 10.496,
- t harfi 9.669,
- r harfi 8.698
- J harfi 125
- Dr. İhsan Sıtkı Yener



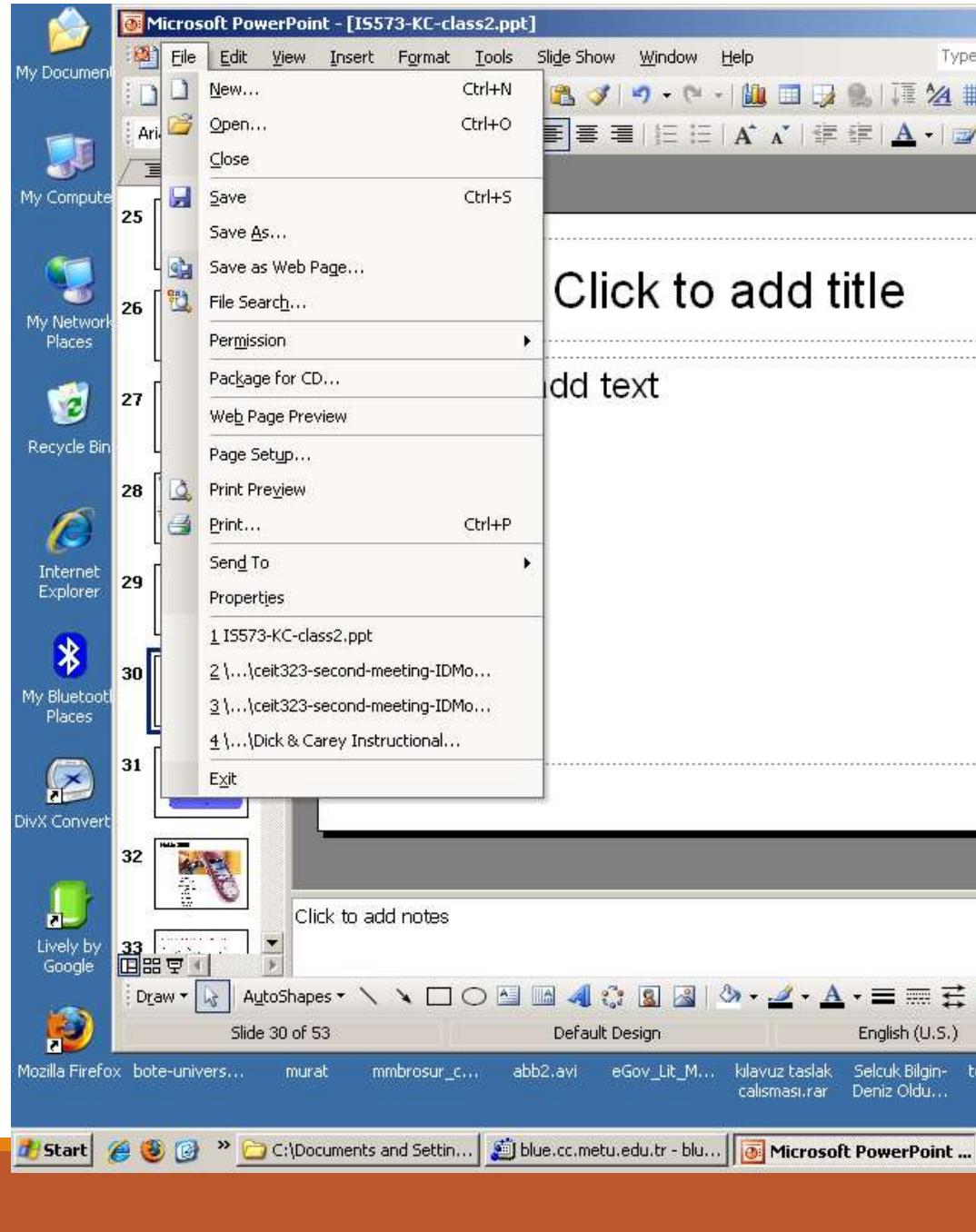
**So....**

*Good Designs do not always  
win!*

# KALQ Keyboard

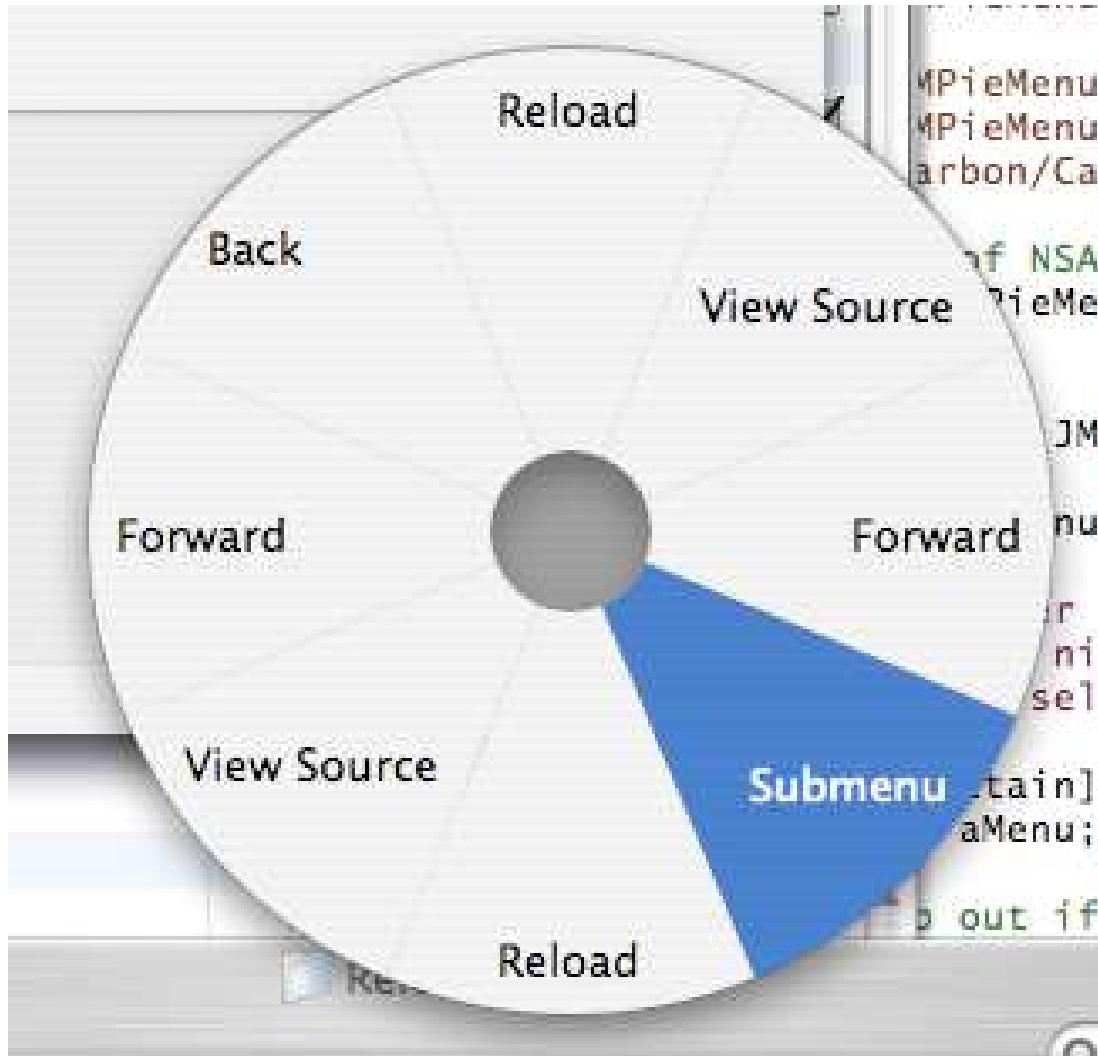
- typing with thumbs
  - 34% increase in speed of typing
- 
- Path dependence?
  - "history matters"





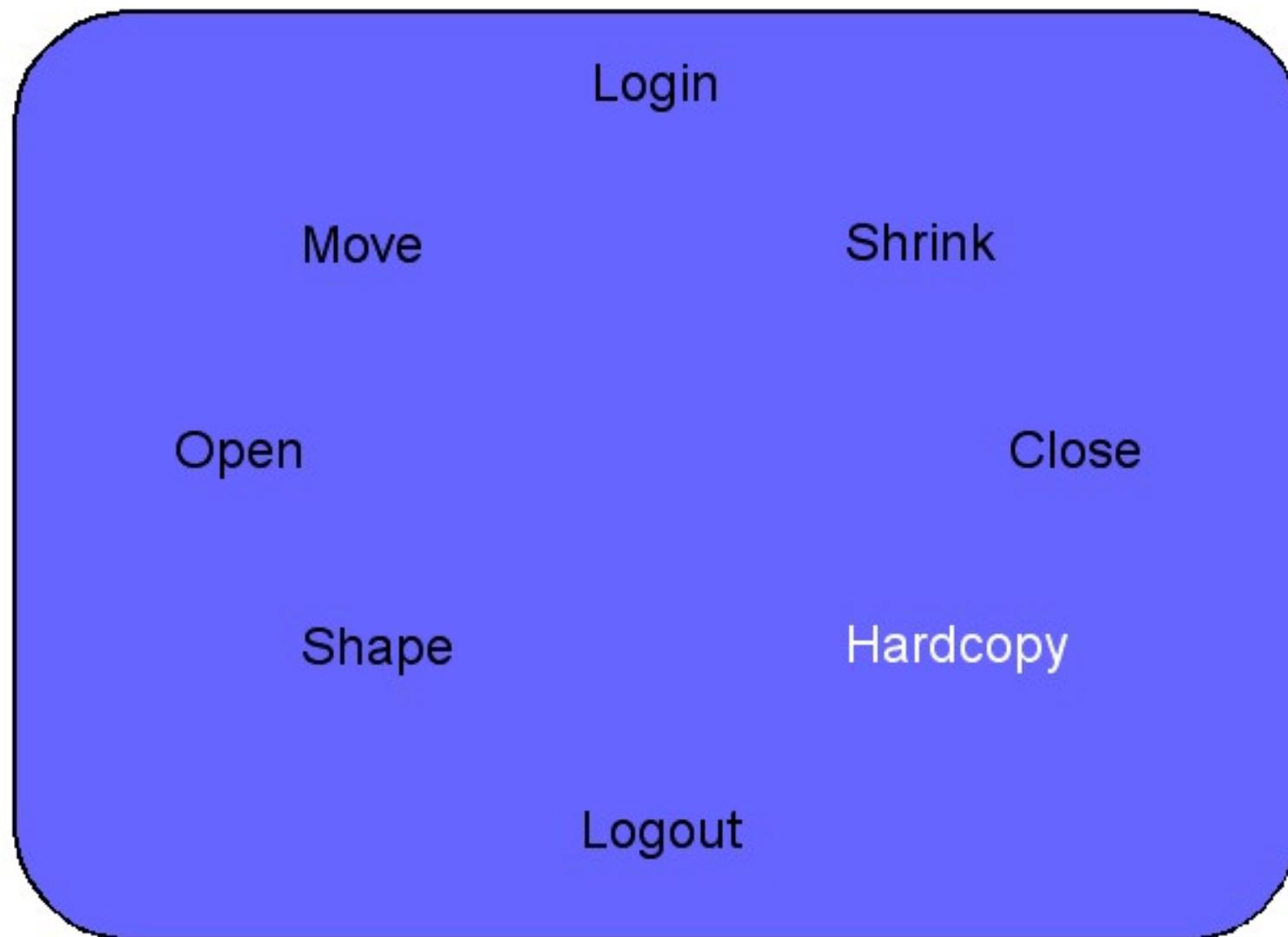
# Only/Best Solution?

## Apply Fitt's Law



How about this one?

*The Pie Menu (see Shneiderman 1993)*



# Nokia 3650



**Everyone  
Has a Story**

**Nokia 3650 Phone:**

- Video capture and playback
- Still imaging
- Multimedia messaging
- Java™ MIDP 1.0
- Bluetooth
- Large color display
- Tri-band world phone

Fuchsia, SKR-323



**From:** Steve Jobs

**Date:** Wed, 05 Oct 2005 17:41:16 -0700

**To:** Jony Ive, Bas Ording

**Subject:** Fwd: Samsung's SGH-E910

Bang & Olufsen "fashionphone"

---

This may be our answer - we could put the number pad around our clickwheel. Of course we should orient it like a watch, with 3, 6, 9 and \* in the pure horizontal and vertical positions, just like any clock (they really screwed this up in that respect. We could also orient the letters so they are easier to read from a normal position (letters on the bottom keys are the opposite of the way there are here, and maybe vertical on the sides).

Thoughts?

Steve

# Assignment-5 – Gesture based interaction

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- Draft version is on SUCourse
- Read it and start working on it as soon as possible
- Make your project groups – ideal size 3 – 4
- Everybody must work on the development – we will follow each student's github activity
- I will share a google docs this weekend to enter group member names

## Week-4 Usability Engineering



FILE

Week-4 Usability Engineering -Ch2 What is Usability Jacob Nielsen



FILE

Week-4 ISO 9241-11 Guidance on Usability

